PROFESSIONAL
SATELLITE CASSETTE ANALOGUE PAL

PSAP 1000
PSAP 3000
PSAP 4000
PSAP 5000

PROFESSIONAL

GSS

Grundig SAT Systems

CONTENTS

3 **General**

Scope of delivery
Technical data
The SAT TV receiver modulators PSAP 1000, PSAP 3000, PSAP 4000 and PSAP 5000

5 **Installation, Connecting**

Installing modulators into the Headend station

6 **The Menu Guide**

The menu guide at a glance

8 **Settings**

Programming the modulator
Selecting the modulator (Box no.) and channel line A or B
Selecting the output channel
Adjusting the frequency offset (Fine tuning)
Selecting the input frequency
Switching the modulator off
Selecting the IF bandwidth
Selecting the audio mode and audio frequency
Adjusting the volume level
Saving all settings
Adjusting the output level of Line A to Line B

12 **Important Information**

The VPS code
Particularities of the »AUDIO« menu

13 **Accessories**

The decoder interface DNS UNIVERSAL
Installing the decoder interface into the receiver modulator

17 **Blanking**

Blanking the picture signal

18 **C-Band Reception**

Service (at the end of this user manual)

Channel/frequency tables

GENERAL

Scope of delivery

1 SAT TV receiver modulator PSAP 1000, PSAP 3000, PSAP 4000 or PSAP 5000
1 RF connecting cable
1 user manual, 1 technical evaluation

Technical data

This product conforms with the requirements of the 73/23/EC and 89/336/EC guidelines of the European Council.
The standards EN 50083-2, EN 50083-2/A1, EN 50083-1, and EN 60065 required for the CE certification are kept to.

SAT input:

Frequency range:	950–2150 MHz
Frequency spacing:	1 MHz
Fine tuning steps:	125 kHz
Level range:	57 dBµV....80 dBµV
IF bandwidth:	3-step bandwidth reduction (threshold)
Video	
Frequency range:	5 Hz–5 MHz
Deviation:	automatic, 14–26 MHz
Polarity:	positive/negative, adjustable
Audio	mono/stereo/dual with VPS identification
Frequency range:	20 Hz–15 kHz
Sound carrier frequency range:	5 MHz–9.77 MHz
Sound IF bandwidth:	adjustable, Main: 280 KHz/Sub: 130 KHz
Deemphasis:	adjustable, Main: 50 µS/75 µS/J 17
Baseband (retrofit kit)	
Frequency range:	20 Hz–10 MHz
Output level:	1 Vpp
Deemphasis:	linear

RF output

Fine tuning range:	± 4 MHz
Fine tuning steps:	62.5 kHz
Signal-to-noise:	60 dB
Output level:	typ. 98 dBµV
Output impedance:	75 Ohm, nominal
PSAP 1000 VHF	
Channels Line A:	C2....C4
Frequency range:	48.25 MHz....62.25 MHz
Channel spacing:	PAL CCIR standard B
Channels Line B:	S3....S24 incl. C5....C12
Frequency range:	119.25 MHz....327.25 MHz
Channel spacing:	PAL CCIR standard B/G
PSAP 3000 VHF	
Channels:	S3....S24 incl. C5....C12
Frequency range:	119.25 MHz....327.25 MHz
Channel spacing:	PAL CCIR standard B/G
PSAP 4000 Hyperband	
Channels:	S21....S41
Frequency range:	303.25 MHz....463.25 MHz
Channel spacing:	PAL CCIR standard B/G
PSAP 5000 UHF	
Channels:	C21....C69
Frequency range:	471.25 MHz....855.25 MHz
Channel spacing:	PAL CCIR standard G

Connectors:

1 SAT input:	1 IEC socket, female, 2. Sat inputs prepared
RF output (modulator):	1 IEC socket, female
Connector (10-pin):	for all supply voltages

Subject to technical alterations and errors.

The receiver modulators PSAP 1 000 VHF, PSAP 3000 VHF, PSAP 4000 Hyperband and PSAP 5000 UHF

With each of these SAT TV receiver modulators, it is possible to convert two TV satellite signals of equal polarization (horizontal or vertical) from the 1st SAT IF range (950-2150 MHz) into the TV bands I to band V.

PSAP 1000 VHF, channel line **A** modulator (Band I, channels C2 to C4) and channel line **B** modulator (Band III, channels S3 to S24 incl. C5 to C12).
PSAP 3000 VHF (Band III, channels S3 to S24 incl. C5 to C12).
PSAP 4000 Hyperband (channels S21 to S41).
PSAP 5000 UHF (Band III, channels C21 to C69).

The boxes are controlled via the GRUNDIG Professional Headend station's PSU 8 and PSU 12.

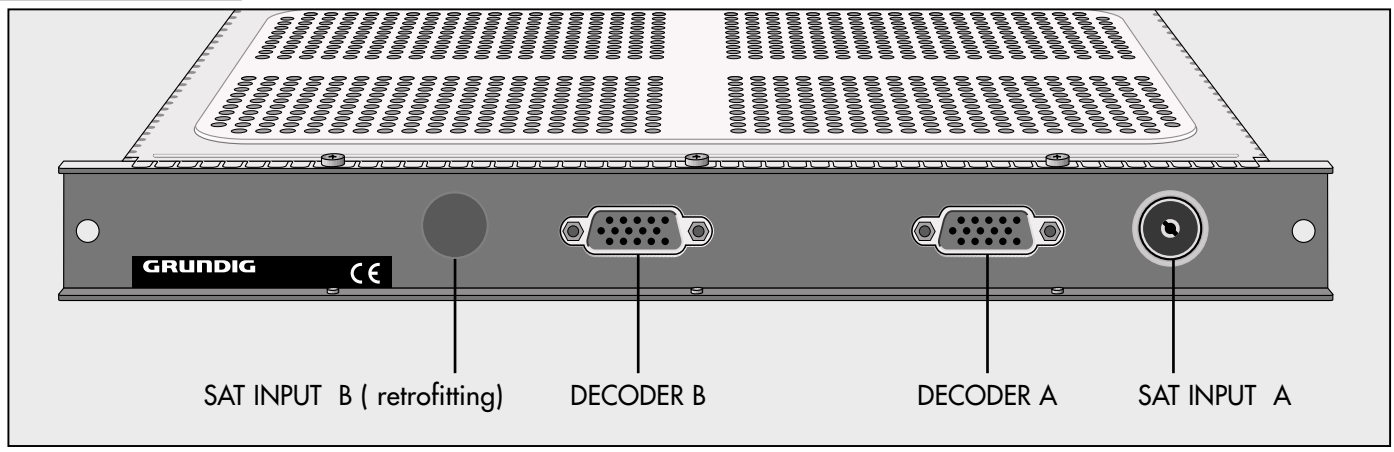
If necessary or desired, a coaxial socket can be retrofitted for a second SAT IF input into these SAT TV modulators.

Each modulator includes 2 channel lines.
The 2 channel lines of one modulator are indicated as A and B in the display.
Every channel line consists of a SAT tuner, the video and audio processors, and a single-sideband stereo modulator for processing one TV programme.
Every modulator has one SAT input and one RF output.
The SAT input signal is splitted according to the modulator specification, converted into a TV reception signal, unified again via a combiner then passed via the RF output socket on to the RF output collector.
The common output level (channel line A and B) of the twin modulator can be adjusted via the mechanical level control on the RF output collector (max. – 20 dB).

After switching the headend station on, the software version of the control unit is briefly shown in the 2-line LC display.
About 5 minutes after the last key is pressed, the display is automatically switched off, or the software version of the control unit is displayed.

Note:
If desired, the software version of the control unit can also manually be called up and displayed as follows:
Press and hold down any two buttons on the control unit at the same time until the following occurs:
– The display turns dark. After several seconds, the software version, e.g. **V.19**, appears.

It is possible to retrofit two decoder interfaces, one for channel line A, and one for channel line B, in each of the twin modulators, for the connection of a decoder, a video camera or a video recorder (see pages 13 to 16).



Installing modulators into the Headend station

Caution:
Before fitting or replacing a cassette, it is absolutely necessary to disconnect the mains plug of the headend station from the wall outlet.

Note:
The "Retrofit coaxial socket" can be ordered from your local SAT/BK service office
or
from the GRUNDIG AG in Nürnberg/Germany.
– Telephone: ++49(0)911/703 87 06
– Telefax : ++49(0)911/703 92 10

Follow these steps:

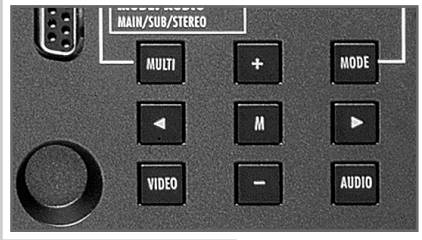
1 Undo the fixing screws of the mounting frame, then fit the cassette into a free slot and refit the fixing screws.

2 Plug the RF input cable into the RF input socket(s) **SAT INPUT A** and/or **SAT INPUT B** (see Figure).

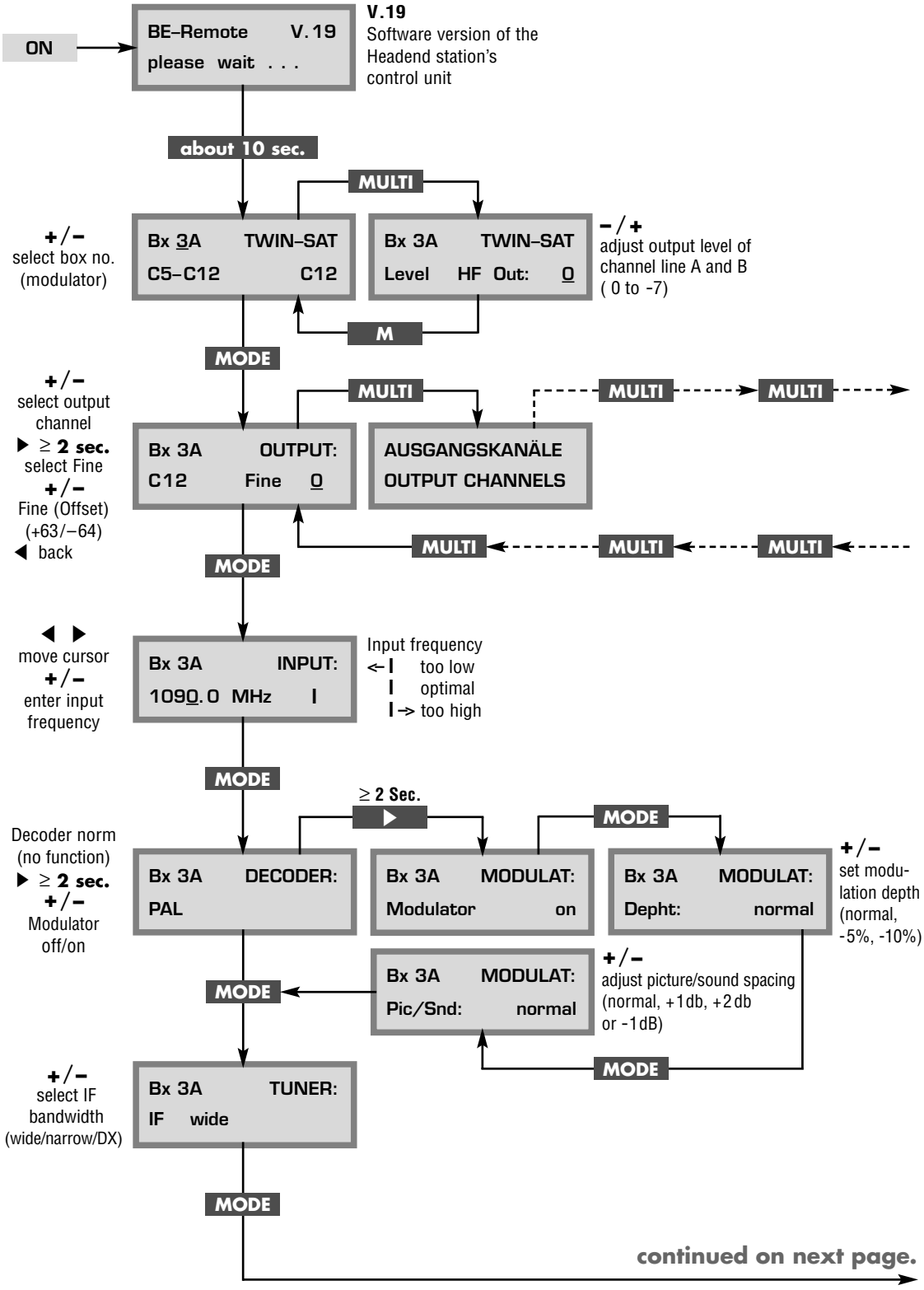
3 If the modulator has been equipped with one or two decoder interfaces: connect external units via the respective connecting cables to the 15-pin Sub-Min-D socket(s) **DECODER A** and/or **DECODER B** (see Figure).

4 Reconnect the Headend station to the mains supply.
– The installed modulator is now connected with all necessary supply voltages and data lines and ready for use.

THE MENU GUIDE



Note:
You may select the individual menus or menu items by pressing the **MODE** key. To go back to the access menu without saving the settings made, press the **MODE** key longer than 2 seconds. When in a menu, use the ◄ and ► keys to select the desired setting, and then the **+** and **–** keys to change the settings. Press the **M** key to save all settings and to return to the access menu.
The following examples show the programming of the SAT receiver modulator **PSAP 3000 VHF**; the output channels **S3** to **S24** incl. **C5** to **C12** can be selected.



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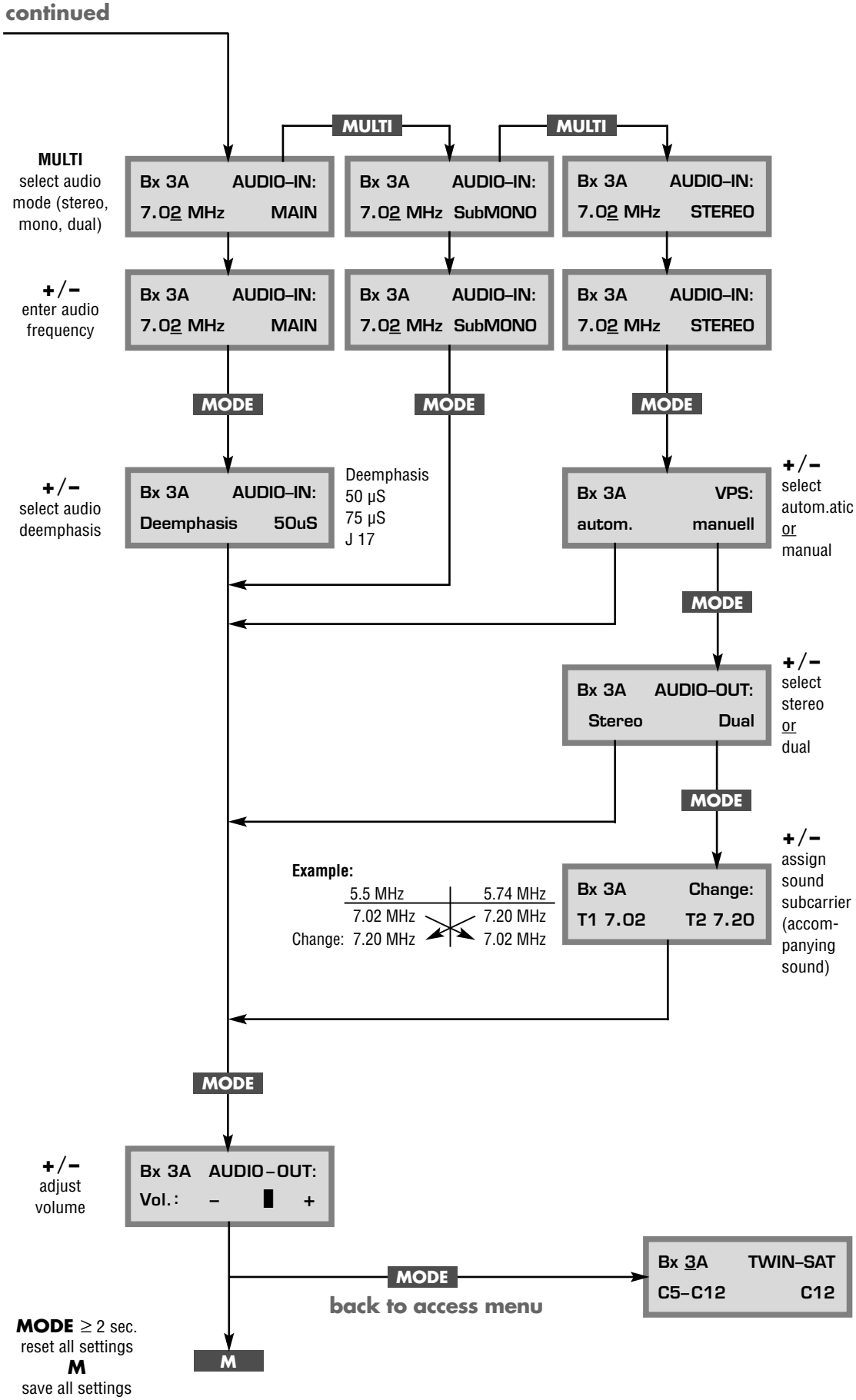
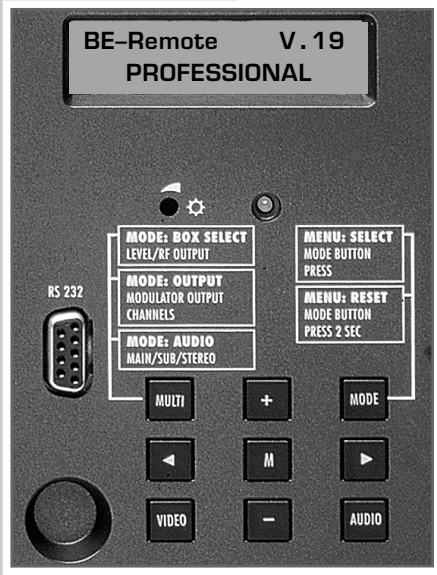

MULTI
MULTI
MULTI
MULTI
select audio mode (stereo, mono, dual)
Bx 3A AUDIO–IN:
7.02 MHz MAIN
Bx 3A AUDIO–IN:
7.02 MHz SubMONO
Bx 3A AUDIO–IN:
7.02 MHz STEREO
+/–
enter audio frequency
Bx 3A AUDIO–IN:
7.02 MHz MAIN
Bx 3A AUDIO–IN:
7.02 MHz SubMONO
Bx 3A AUDIO–IN:
7.02 MHz STEREO
MODE
MODE
MODE
+/–
select audio deemphasis
Bx 3A AUDIO–IN:
Deemphasis 50uS
Deemphasis
50 µS
75 µS
J 17
Bx 3A VPS:
autom. manuell
+/–
select autom.atic or manual
MODE
Bx 3A AUDIO–OUT:
Stereo Dual
+/–
select stereo or dual
MODE
Example:
5.5 MHz 5.74 MHz
7.02 MHz 7.20 MHz
Change: 7.20 MHz 7.02 MHz
Bx 3A Change:
T1 7.02 T2 7.20
+/–
assign sound subcarrier (accompanying sound)
MODE
+/–
adjust volume
Bx 3A AUDIO–OUT:
Vol.: – +
MODE
Bx 3A TWIN–SAT
C5–C12 C12
back to access menu
MODE ≥ 2 sec.
reset all settings
M
save all settings
M

Programming the receiver modulator



Programming of the receiver modulator is effected exclusively via the keys of the basic module carrier's control unit.
The user is guided via the two-line display on the control unit.

1 The following menu items can be selected using the **MODE** button:
- – Modulator (Box no.) and channel line A or B.
- – Output cannel /fine tuning (offset)
- – Input frequency including fine tuning
- – Decoder (without function)
- – IF bandwidth (wide, narrow, dx)
- – Main carrier/subcarrier (Main/SubMono/Stereo)
- – Carrier frequency (5.00…9.77 MHz)
- – Various audio settings
- – Volume adjustment

Note:
The following examples show the programming of the SAT receiver modulator **PSAP 3000 VHF**; the output channels can be adjusted from **S3** to **S24** including **C5** to **C12**.

Select modulator (Box no. and Line A or B)

Bx 3A	TWIN–SAT
C5–C12	C12

1 A few moments after switching the Headend station on, the access menu, e.g. »Box 3A TWIN–SAT« appears in the control unit's display.

2 Use the **+** or **–** button to select the desired modulator (Box no.) and the desired Line »A« or »B« .

Select the output channel

Bx 3	OUTPUT
C12	

1 Press the MODE button. The »OUTPUT:« menu appears in the display.

2 Press the **MULTI** button to call up the programmed output channels.

3 Use the **+** or **–** button to select the desired output channel.

Adjust the frequency offset (fine tuning)

Caution:
The frequency offset should only be changed in exceptional cases as otherwise all TV sets connected to the cable system must corrected accordingly using the fine tuning facility.

Bx 3A		OUTPUT:
C12	Fine	0

1 Press the ► button until »Fine 0« also appears in the display, and then use the **+** or **–** button to select a different value.
Press the ◄ button to return to the initial setting.

Enter the input frequency

1 Press the **MODE** button. The »INPUT:« menu appears in the display.

2 Use the ◄ or ► button to move the cursor to the desired position, and then use the **+** or **–** button to enter the input frequency.

Meaning of symbols:
<–I–> = too low input frequency
<–I–> = too high input frequency
<–I–> = optimum input frequency

Select the decoder menu

1 Press the **MODE** button. The »DECODER:« menu appears in the display.
– The Deemphasis setting has no function for this modulator.

Select the modulator menu

1 Press the ► button until the »Box 3A MODULAT:« menu, for example, appears in the display.

2 Use the **+** or **–** button to switch the respective modulator off or on again.

Select the modulation depth

On pictures with audio hum, it is possible to cut the modulation depth.

1 Press the **MODE** button. The »MODULAT:« menu and for example »Depth: normal« appear in the display.

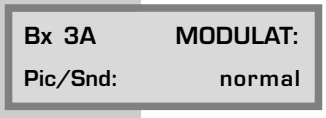
2 Use the **+** or **–** button to adjust the appropriate modulation depth (normal, -5%, or -10%).

Select the picture/sound spacing

In the event of eventual moireé interferences, it is possible to cut the second sound carrier (5.74MHz).

1 Press the **MODE** button. The »MODULAT:«. menu with, for example, »Pic/Snd: normal« appears in the display.

2 Use the **+** or **–** button to adjust the optimum picture/sound spacing (+1 dB, +2 dB, –1dB, or normal).



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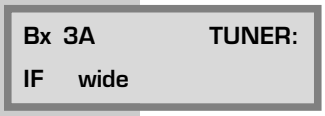
Select the IF bandwidth (threshold)

The IF bandwidth should only be changed if reception is poor.



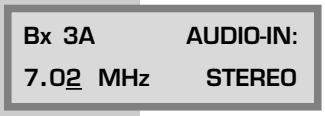
1 Press the **MODE** button. The »TUNER:« menu appears in the display.

2 Use the **+** or **−** button to adjust the picture and sound to suit your taste (wide, narrow, DX).

Select the audio mode and sound frequency (input)

1 Press the **MODE** button. The »AUDIO-IN:« menu appears in the display.

2 Use **MULTI** button to select the audio modes »MAIN«, »SubMONO« or »STEREO« .



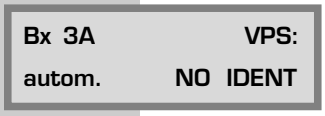
3 Use the ◄ or ► button to move the cursor to the desired position. Then use the **+** or **−** button to select the desired sound frequency.

Change the deemphasis in the »MAIN« audio mode

1 Press the **MODE** button. The »AUDIO-IN:« menu appears in the display.

2 Use the **+** or **−** button to select the audio settings »50 µS«, »75 µS« or »J17«.

In the »STEREO« audio mode



1 Press the **MODE** button. The »VPS:« menu appears in the display.

Note:
If the indications »autom.« and »NO IDENT« appear, the station is broadcasting no VPS code.
In this case, select the »manual« option.

2 Use the **+** or **−** button to select the »autom.« or »manual« option.

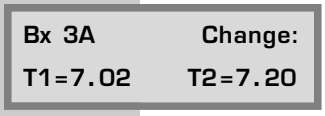
Select stereo/dual with the »manual« setting

1 Press the **MODE** button. The »AUDIO-OUT:« menu appears in the display.

2 Use the **+** or **−** button to select the audio settings »Stereo« or »Dual«.

Change sound 1/sound 2 with the »Dual« setting

1 Press the **MODE** button. The »Change:« menu appears in the display.



2 If necessary or desired:
Use the **+** or **−** button to change the audio frequencies »T1 7.02 ⇆ 7.20« and »T2 7.20 ⇆ 7.02«.

Adjust the volume level

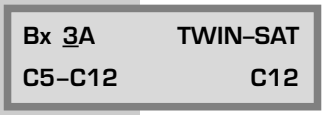
It is possible to adjust different volume levels of the programmed stations to each other.
The adjustment is possible in six volume steps.

1 Press the **MODE** button. In the display appears, for example, the menu »Bx 1A AUDIO-OUT:«.

2 Use the **+** or **–** button to adjust the volume levels to each other.

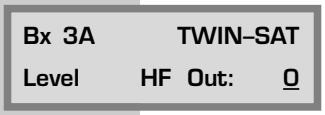
Attention:
To restore the initial volume settings, press the **MODE** button until the access menu, for example »Bx 3A TWIN–SAT« reappears.
Then use the **+** or **–** button to select another modulator (e.g. »Bx 1«).
– The initial values are restored.

Save all settings



1 Press the **M** button to save all new settings.
– The access menu, for example »Bx 3A TWIN–SAT«, reappears in the display.

Adjust the output level of channel line A to line B



1 Press the **MULTI** button. The »Level HF Out:« menu appears in the display.

2 Use the **+** or **–** button to adjust the RF output level of channel line »A« to line »B« (from 0 to –7 dB).

3 Press the **M** button to save the setting.
– The access menu, for example »Bx 3A TWIN–SAT«, reappears in the display

The VPS code

TV programmes are broadcast in the audio modes mono, stereo or two-channel sound (dual).
Many TV stations identify these different audio modes by the **VPS** signal (VPS = Video Programme System).
The SAT receiver modulator recognizes this signal and automatically switches to the corresponding audio mode.
TV stations which are not broadcasting such identifiable signals do not change the audio mode. This must be done manually in this case.

Particularities in the »AUDIO« menu . . .

. . . for the audio modes »MAIN« (main carrier, »SubMONO«, »STEREO« and »DUAL« (= dual-channel sound):

1 When selecting »MAIN« (main carrier), no particularities must be observed. After selecting the frequency, only the appropriate deemphasis must be selected and the volume adjusted.

2 The »SubMONO« audio mode is selected if the TV sound is transmitted in mono on a frequency of 7.02 or 7.20 MHz etc.

3 In the »STEREO« audio mode, only the lower sound carrier of the respective stereo pair 7.02/7.20 MHz or 7.38/7.56 MHz etc. is selected.
– The upper sound carrier is then automatically received on a frequency which is 180 kHz higher.

4 If the option »autom.« is selected in the following «VPS» menu, and if the indications »Stereo«, »Dual« or »Mono« appear in addition, then the receiver modulator recognizes the correct VPS code and switches automatically to the corresponding audio mode.

5 In the following »AUDIO OUT« menu, the »Stereo« or »Dual« (two-channel sound) audio modes now must be selected manually.
– »Stereo« is selected for stations transmitting the audio signals on the sound subcarriers and which are transmitting no identifiable signals.
– »Dual« is selected for stations which are transmitting different languages on the sound subcarriers
Please note that the appropriate lower sound carrier (7.02/7.20) can be assigned the output sound carrier 5.5 MHz or 5.74 MHz via the »Change« option in the AUDIO menu.

6 For example, to assign the German TV sound of 7.20 MHz to the 5.5 MHz sound carrier of the **"EUROSPORT"** channel, it is necessary to exchange the frequencies in the AUDIO menu option »Change«.

7 With the last menu option »AUDIO-OUT Vol.:«, it is possible to adjust the volume level of the various receiver modulators to the volume level of the tuned stations.

The decoder retrofit kit DNS UNIVERSAL, Order no. GAG 2200.

General

The decoder retrofit kit **DNS UNIVERSAL** serves for retrofitting also analog GRUNDIG PROFI cassettes **PSAP 1000, PSAP 3000, PSAP 4000** and **PSAP 5000**.

Important:
Contrary to the indications in the mouniting instructions of the retrofit kit, the adapter plate supplied is not required for the installation into this cassette.

The following units can be connected to this retrofit kit:
– a licenced decoder (descrambler)
– a video recorder (e.g. for use in a hotel), or
– a video camera (e.g. for monitoring a playground).

It provides the function of coupling in and out the video and audio signals.
In addition, this retrofit kit can remotely be controlled via a 0/12 V switching voltage, for example, to switch between the signals from a monitor camera and the satellite TV and radio programmes.
The external equipment is switched via the 12 V switching voltage input, pin 3 of the Sub-D socket, into the signal path

Most decoders/descramblers, video recorders or video cameras, deliver a 12 V switching voltage at contact 8 of the EURO/AV socket.
If the external equipment does not deliver a 12 V switching voltage, refer to the section “Feeding the picture/sound signals of external equipment permanently into the signal path”.

Continued on next page.

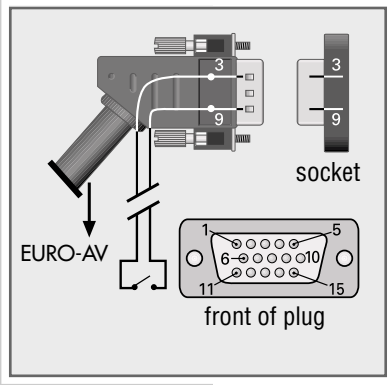
Feeding the picture/sound signals of external equipment permanently into the signal path

1 Fit the decoder module and the required flat ribbon cable.

In addition you must
cut the three wire bridges BR 1068 (Audio, right), BR 1093 (Audio, left) and BR 1094 (Video), for channel **LINE A**
and
cut the three wire bridges BR 2068 (Audio, right), BR 2093 (Audio, left) and BR 2094 (Video), for channel **LINE B** (see Figure below).

Remote switching

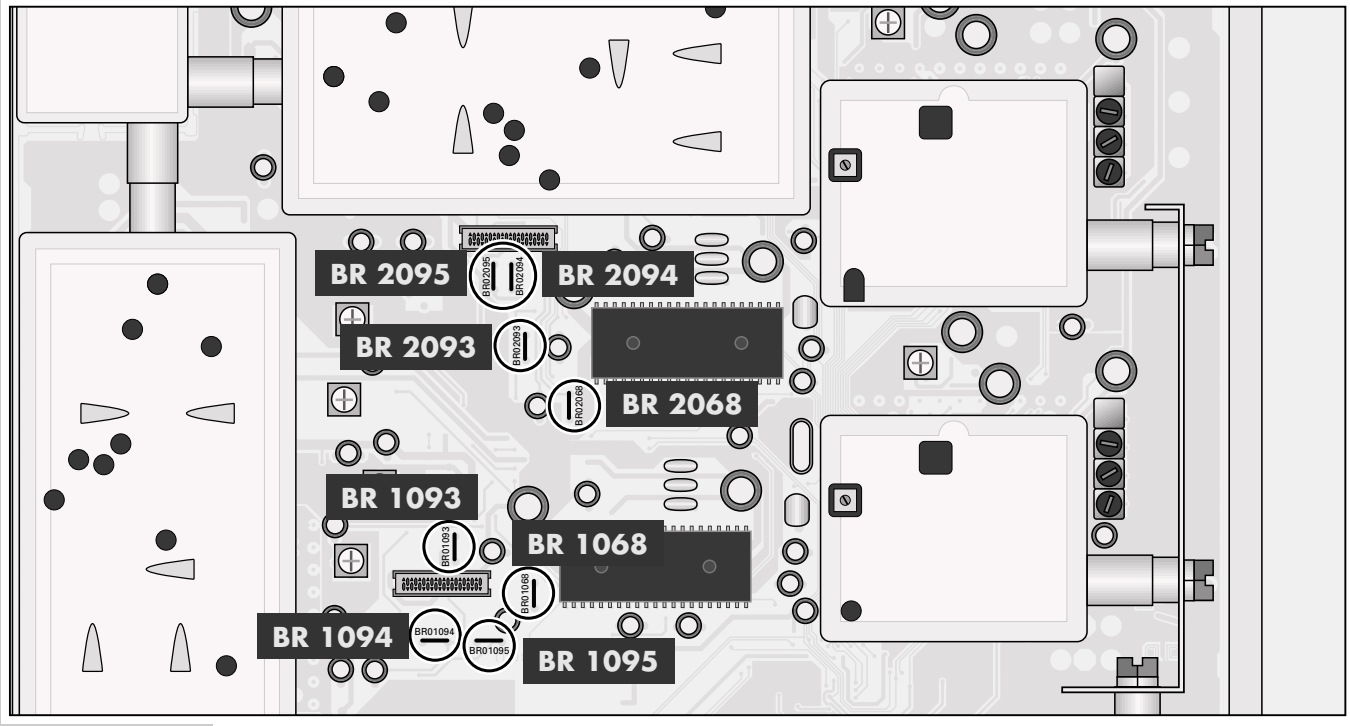
It is possible to remotely switch between the picture/sound signals of the SAT programmes and the external equipment.
Switching can be effected, for example, manually or via a timer or via a dimming switch.



1 Connect the switch inside the 15-pin plug of the enclosed adapter cable to the pin 9 (12 V/10 mA switching voltage) and to the pin 3 (see Figure).

2 Fit the decoder module and the required flat ribbon cable.

In addition you must
cut the four wire bridges BR 1068 (Audio, right), BR 1093 (Audio, left), BR 1094 (Video), and BR 1095 "Dec – off", for channel **LINE A**
and
cut the four wire bridges BR 2068 (Audio, right), BR 2093 (Audio, left), BR 2094 (Video), and BR 2095 "Dec – off", for channel **LINE B** (see Figure below).

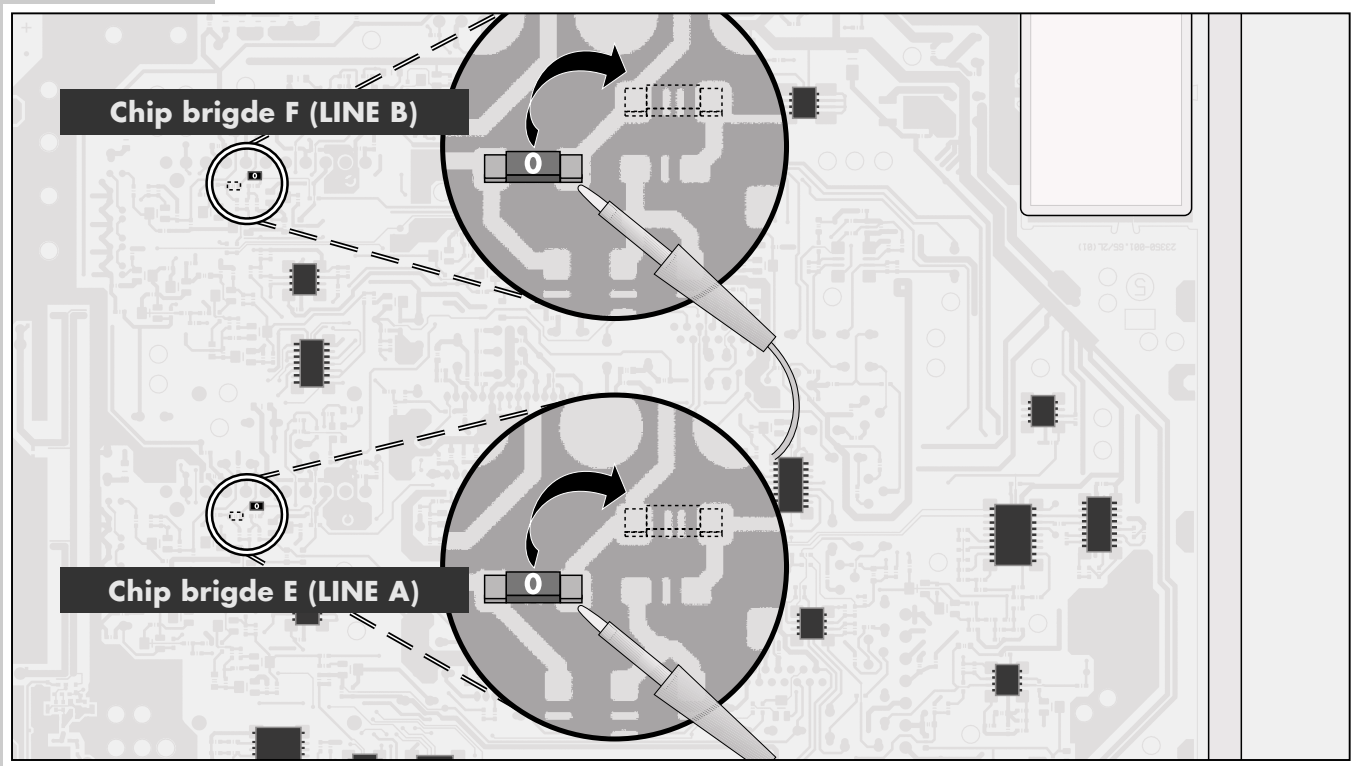


Video-controlled memory

If external picture/sound signals are to be permanently fed in (without switching voltage), we recommend to feed in the picture/sound signals via pin 10 of the Sub-D socket.
In this case, the picture/sound signals are fed in a clamped and controlled way into the modulator. In this way, output levels of different strength from the external equipment are adjusted accordingly.

For that, on the component side of the chassis board, you must
cut the two wire bridges BR 1068 (Audio, right) and BR 1093 (Audio, left), for channel **LINE A**
and
the two wire bridges BR 2068 (Audio, right) and BR 2093 (Audio, left), for channel **LINE B** (see Figure on page 14).

In addition you must
resolder the two chip bridges **E** (for channel **LINE A**) and **F** (for channel **LINE B**) on the solder side of the cassette (see Figure below).



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Installing the decoder retrofit kit into the cassette

Note:
Two decoder retrofit kits can be installed into each of the two twin SAT cassettes: one for channel **LINE A** and one for channel **LINE B**.

1 Remove the cover from the top of the cassette.

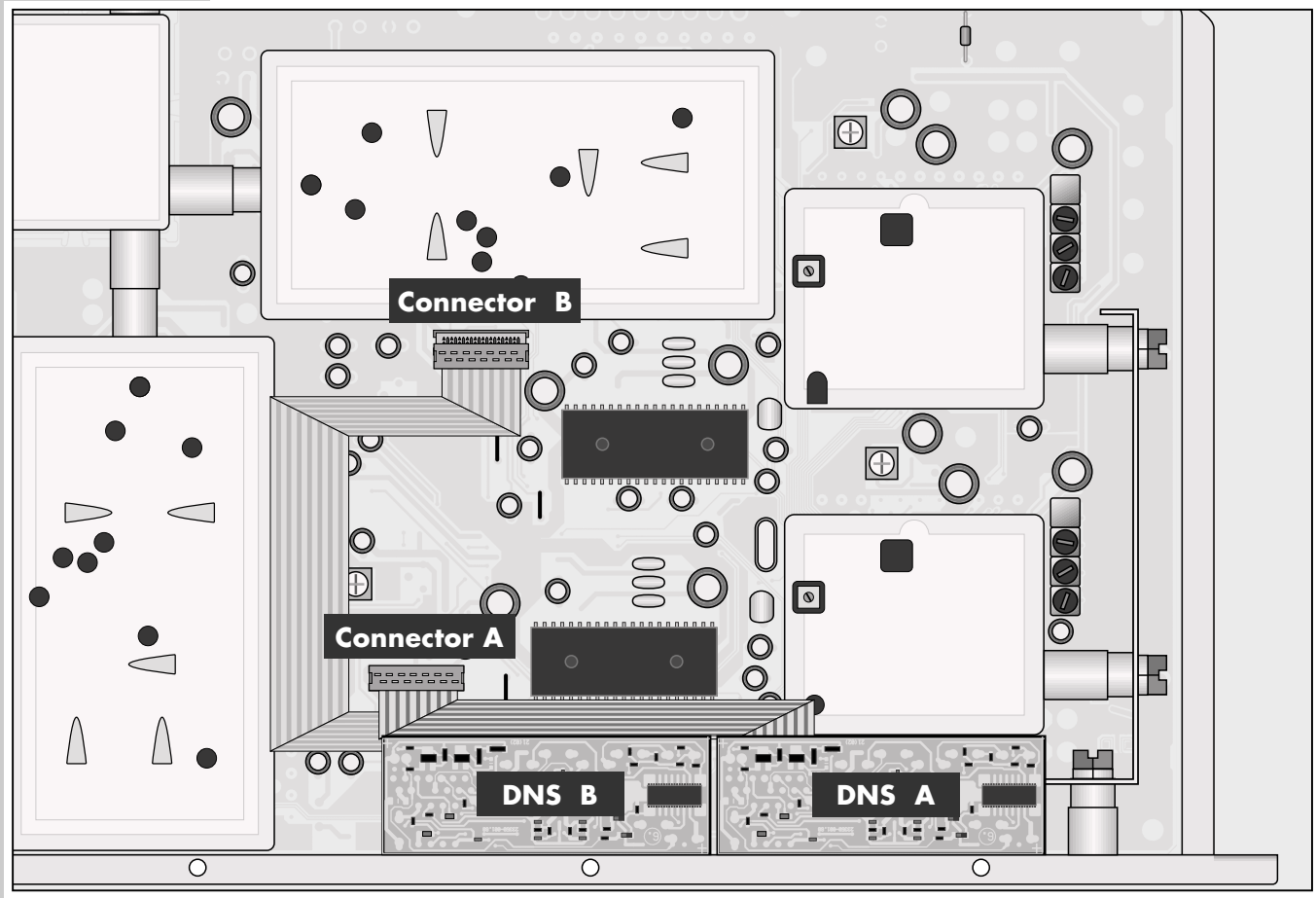
2 Break out the corresponding pre-punched opening in the front side of the cassette.

3 Plug one female connector of the flat ribbon cable into the corresponding connector on the decoder retrofit kit.

4 Insert the decoder retrofit kit with the solder side up into the opening and fix it with the screws enclosed.

5 Plug the other female connector of the flat ribbon cable into the corresponding connector of the chassis board of the cassette.

6 Refit and fix the cover of the cassette.



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BLANKING

Blanking the picture signal

With pure sound transmissions (e.g. in hotel systems), the picture signal can be blanked (dark picture).

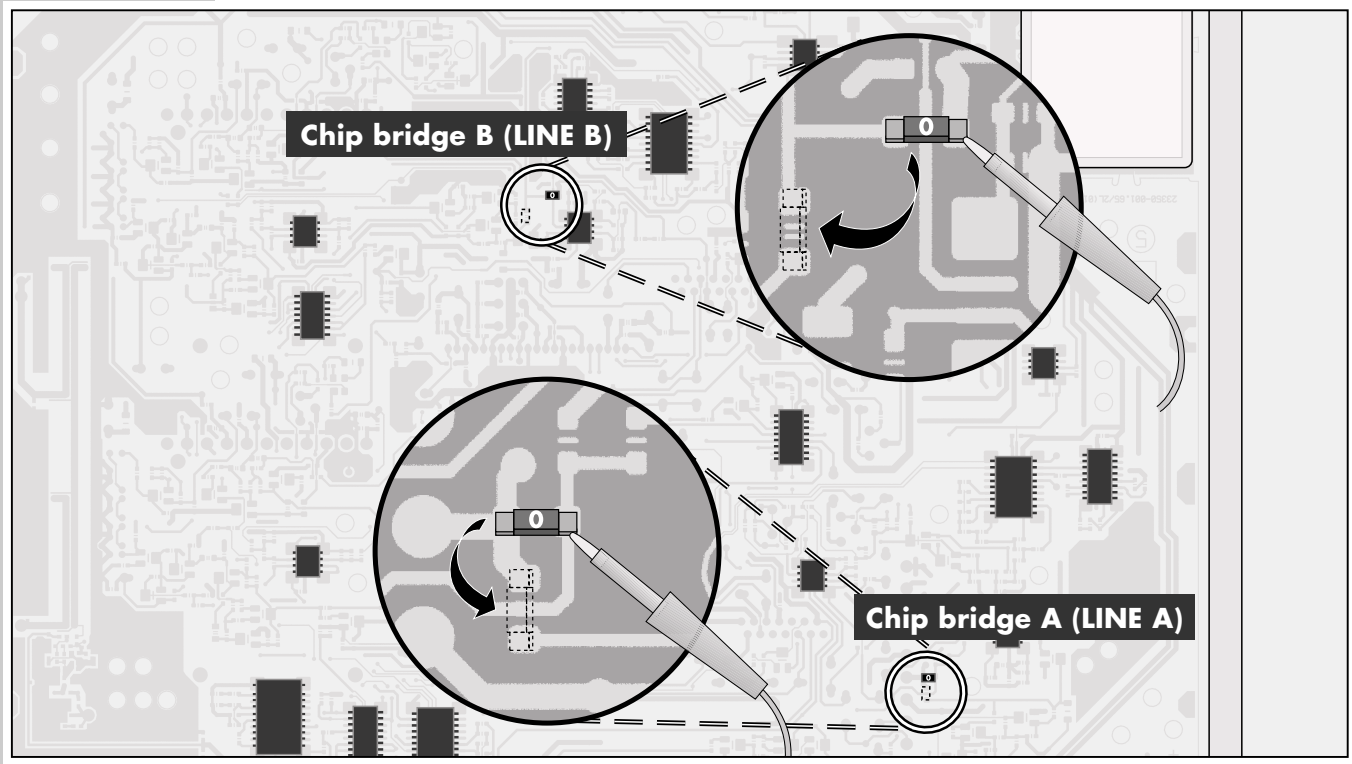
1 Remove the cover from the bottom of the cassette.

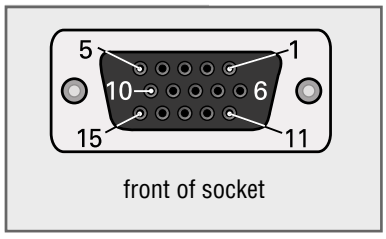
2 Resolder the two chip bridges **A** (for channel **LINE A**) and **B** (for channel **LINE B**) on the solder side of the cassette (see Figure below).

3 Refit and fix the cover to the bottom of the cassette.

4 Refit, fix and connect the cassette.

5 Tune to an analog satellite programme and feed in an external sound signal via the 15 pin Sub-D socket.





Pin assignment of the Sub-D socket

01 = Audio input, left
02 = CCVS input, unregulated
03 = Switching voltage input, 12 V-
04 = Baseband output (unclamped, linear)
05 = CCVS output (clamped, PAL deemphasis)
06 = Audio input, right
07 = --
08 = Ground
09 = Switching voltage output, 12 V-/10 mA
10 = CCVS input, external picture signals are clamped and regulated
11 = Ground
12 = Audio output, left
13 = Audio output, right
14 = --
15 = --

C-Band reception

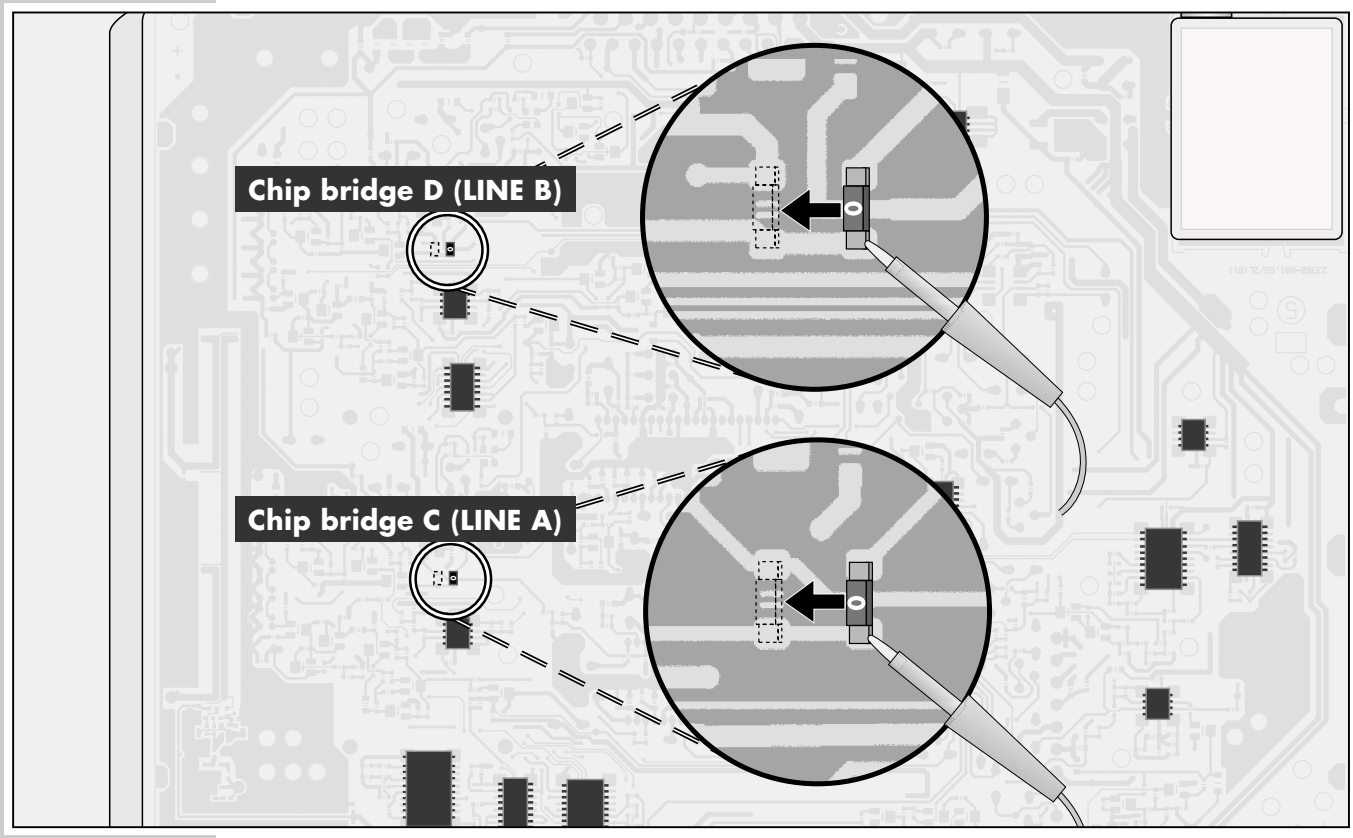
With an appropriate satellite aerial and LNB this cassette can also receive C-band stations (4 GHz).
For these stations, a negative video polarity must be selected.

1 Remove the cover from the bottom of the cassette.

2 Resolder the two chip bridges **C** (for channel **LINE A**) und **D** (for channel **LINE B**) on the solder side of the cassette (see Figure below).

3 Refit and fix the cover to the bottom of the cassette.

4 Refit, fix and connect the cassette.



CCIR-Kanalraster/CCIR Channel Steps/Pas de canaux CCIR

Bild-/Ton-Abstand: 5,5 MHz / Video-audio distance: 5.5 MHz / Ecart vidéo/audio: 5,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
C 2	48,25	S 16	266,25	S 41	463,25	C 45	663,25
C 3	55,25	S 17	273,25	C 21	471,25	C 46	671,25
C 4	62,25	S 18	280,25	C 22	479,25	C 47	679,25
S 2	112,25	S 19	287,25	C 23	487,25	C 48	687,25
S 3	119,25	S 20	294,25	C 24	495,25	C 49	695,25
S 4	126,25	S 21	303,25	C 25	503,25	C 50	703,25
S 5	133,25	S 22	311,25	C 26	511,25	C 51	711,25
S 6	140,25	S 23	319,25	C 27	519,25	C 52	719,25
S 7	147,25	S 24	327,25	C 28	527,25	C 53	727,25
S 8	154,25	S 25	335,25	C 29	535,25	C 54	735,25
S 9	161,25	S 26	343,25	C 30	543,25	C 55	743,25
S 10	168,25	S 27	351,25	C 31	551,25	C 56	751,25
C 5	175,25	S 28	359,25	C 32	559,25	C 57	759,25
C 6	182,25	S 29	367,25	C 33	567,25	C 58	767,25
C 7	189,25	S 30	375,25	C 34	575,25	C 59	775,25
C 8	196,25	S 31	383,25	C 35	583,25	C 60	783,25
C 9	203,25	S 32	391,25	C 36	591,25	C 61	791,25
C 10	210,25	S 33	399,25	C 37	599,25	C 62	799,25
C 11	217,25	S 34	407,25	C 38	607,25	C 63	807,25
C 12	224,25	S 35	415,25	C 39	615,25	C 64	815,25
S 11	231,25	S 36	423,25	C 40	623,25	C 65	823,25
S 12	238,25	S 37	431,25	C 41	631,25	C 66	831,25
S 13	245,25	S 38	439,25	C 42	639,25	C 67	839,25
S 14	252,25	S 39	447,25	C 43	647,25	C 68	847,25
S 15	259,25	S 40	455,25	C 44	655,25	C 69	855,25

France-Kanalraster/France Chann. Steps/Pas de canaux en France

Bild-/Ton-Abstand: 6,5 MHz / Video-audio distance: 6.5 MHz / Ecart vidéo/audio: 6,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
C 21	471,25	C 34	575,25	C 47	679,25	C 60	783,25
C 22	479,25	C 35	583,25	C 48	687,25	C 61	791,25
C 23	487,25	C 36	591,25	C 49	695,25	C 62	799,25
C 24	495,25	C 37	599,25	C 50	703,25	C 63	807,25
C 25	503,25	C 38	607,25	C 51	711,25	C 64	815,25
C 26	511,25	C 39	615,25	C 52	719,25	C 65	823,25
C 27	519,25	C 40	623,25	C 53	727,25	C 66	831,25
C 28	527,25	C 41	631,25	C 54	735,25	C 67	839,25
C 29	535,25	C 42	639,25	C 55	743,25	C 68	847,25
C 30	543,25	C 43	647,25	C 56	751,25	C 69	855,25
C 31	551,25	C 44	655,25	C 57	759,25		
C 32	559,25	C 45	663,25	C 58	767,25		
C 33	567,25	C 46	671,25	C 59	775,25		

OIRT-Kanalraster/OIRT Channel Steps/Pas de canaux OIRT

Bild-/Ton-Abstand: 6,5 MHz / Video-audio distance: 6.5 MHz / Ecart vidéo/audio: 6,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
R 1	49,75	s 14	271,25	C 21	471,25	C 46	671,25
R 2	59,25	s 15	279,25	C 22	479,25	C 47	679,25
R 3	77,25	s 16	287,25	C 23	487,25	C 48	687,25
R 4	85,25	s 17	295,25	C 24	495,25	C 49	695,25
R 5	93,25	s 18	303,25	C 25	503,25	C 50	703,25
s 1	111,25	s 19	311,25	C 26	511,25	C 51	711,25
s 2	119,25	s 20	319,25	C 27	519,25	C 52	719,25
s 3	127,25	s 21	327,25	C 28	527,25	C 53	727,25
s 4	135,25	s 22	335,25	C 29	535,25	C 54	735,25
s 5	143,25	s 23	343,25	C 30	543,25	C 55	743,25
s 6	151,25	s 24	351,25	C 31	551,25	C 56	751,25
s 7	159,25	s 25	359,25	C 32	559,25	C 57	759,25
s 8	167,25	s 26	367,25	C 33	567,25	C 58	767,25
R 6	175,25	s 27	375,25	C 34	575,25	C 59	775,25
R 7	183,25	s 28	383,25	C 35	583,25	C 60	783,25
R 8	191,25	s 29	391,25	C 36	591,25	C 61	791,25
R 9	199,25	s 30	399,25	C 37	599,25	C 62	799,25
R 10	207,25	s 31	407,25	C 38	607,25	C 63	807,25
R 11	215,25	s 32	415,25	C 39	615,25	C 64	815,25
R 12	223,25	s 33	423,25	C 40	623,25	C 65	823,25
s 9	231,25	s 34	431,25	C 41	631,25	C 66	831,25
s 10	239,25	s 35	439,25	C 42	639,25	C 67	839,25
s 11	247,25	s 36	447,25	C 43	647,25	C 68	847,25
s 12	255,25	s 37	455,25	C 44	655,25	C 69	855,25
s 13	263,25	s 38	463,25	C 45	663,25		

GB-Kanalraster/GB Channel Steps/Pas de canaux en GB

Bild-/Ton-Abstand: 6,0 MHz / Video-audio distance: 6.0 MHz / Ecart vidéo/audio: 6,0 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
A	45,75	C 26	511,25	C 41	631,25	C 56	751,25
B	53,75	C 27	519,25	C 42	639,25	C 57	759,25
C	61,75	C 28	527,25	C 43	647,25	C 58	767,25
D	175,25	C 29	535,25	C 44	655,25	C 59	775,25
E	183,25	C 30	543,25	C 45	663,25	C 60	783,25
F	191,25	C 31	551,25	C 46	671,25	C 61	791,25
G	199,25	C 32	559,25	C 47	679,25	C 62	799,25
H	207,25	C 33	567,25	C 48	687,25	C 63	807,25
I	215,25	C 34	575,25	C 49	695,25	C 64	815,25
J	223,25	C 35	583,25	C 50	703,25	C 65	823,25
C 21	471,25	C 36	591,25	C 51	711,25	C 66	831,25
C 22	479,25	C 37	599,25	C 52	719,25	C 67	839,25
C 23	487,25	C 38	607,25	C 53	727,25	C 68	847,25
C 24	495,25	C 39	615,25	C 54	735,25	C 69	855,25
C 25	503,25	C 40	623,25	C 55	743,25		

China-Kanalraster/China Channel Steps/Pas de canaux en China

Bild-/Ton-Abstand: 6,5 MHz / Video-audio distance: 6.5 MHz / Ecart vidéo/audio: 6,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
D 1	49,75	Z 14	272,25	D 13	471,25	D 38	711,25
D 2	57,75	Z 15	280,25	D 14	479,25	D 39	719,25
D 3	65,75	Z 16	288,25	D 15	487,25	D 40	727,25
D 4	77,25	Z 17	296,25	D 16	495,25	D 41	735,25
D 5	85,25	Z 18	304,25	D 17	503,25	D 42	743,25
Z 1	112,25	Z 19	312,25	D 18	511,25	D 43	751,25
Z 2	120,25	Z 20	320,25	D 19	519,25	D 44	759,25
Z 3	128,25	Z 21	328,25	D 20	527,25	D 45	767,25
Z 4	136,25	Z 22	336,25	D 21	535,25	D 46	775,25
Z 5	144,25	Z 23	344,25	D 22	543,25	D 47	783,25
Z 6	152,25	Z 24	352,25	D 23	551,25	D 48	791,25
Z 7	160,25	Z 25	360,25	D 24	559,25	D 49	799,25
D 6	168,25	Z 26	368,25	D 25	607,25	D 50	807,25
D 7	176,25	Z 27	376,25	D 26	615,25	D 51	815,25
D 8	184,25	Z 28	384,25	D 27	623,25	D 52	823,25
D 9	192,25	Z 29	392,25	D 28	631,25	D 53	831,25
D 10	200,25	Z 30	400,25	D 29	639,25	D 54	839,25
D 11	208,25	Z 31	408,25	D 30	647,25	D 55	847,25
D 12	216,25	Z 32	416,25	D 31	655,25	D 56	855,25
Z 8	224,25	Z 33	424,25	D 32	663,25	D 57	863,25
Z 9	232,25	Z 34	432,25	D 33	671,25		
Z 10	240,25	Z 35	440,25	D 34	679,25		
Z 11	248,25	Z 36	448,25	D 35	687,25		
Z 12	256,25	Z 37	456,25	D 36	695,25		
Z 13	264,25	Z 38	464,25	D 37	703,25		

USA-Kanalraster/USA Channel Steps/Pas de canaux en E.U.A.

Bild-/Ton-Abstand: 4,5 MHz / Video-audio distance: 4.5 MHz / Ecart vidéo/audio: 4,5 MHz

Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz	Kanal Chann. Canal	Freq. BT in MHz Frequ. in MHz Fréqu. en MHz
c 2	55,25	P	253,25	c 33	585,25	c 60	747,25
c 3	61,25	Q	259,25	c 34	591,25	c 61	753,25
c 4	67,25	R	265,25	c 35	597,25	c 62	759,25
c 5	77,25	S	271,25	c 36	603,25	c 63	765,25
c 6	83,25	T	277,25	c 37	609,25	c 64	771,25
A	121,25	U	283,25	c 38	615,25	c 65	777,25
B	127,25	V	289,25	c 39	621,25	c 66	783,25
C	133,25	W	295,25	c 40	627,25	c 67	789,25
D	139,25	c 14	471,25	c 41	633,25	c 68	795,25
E	145,25	c 15	477,25	c 42	639,25	c 69	801,25
F	151,25	c 16	483,25	c 43	645,25	c 70	807,25
G	157,25	c 17	489,25	c 44	651,25	c 71	813,25
H	163,25	c 18	495,25	c 45	657,25	c 72	819,25
I	169,25	c 19	501,25	c 46	663,25	c 73	825,25
c 7	175,25	c 20	507,25	c 47	669,25	c 74	831,25
c 8	181,25	c 21	513,25	c 48	675,25	c 75	837,25
c 9	187,25	c 22	519,25	c 49	681,25	c 76	843,25
c 10	193,25	c 23	525,25	c 50	687,25	c 77	849,25
c 11	199,25	c 24	531,25	c 51	693,25	c 78	855,25
c 12	205,25	c 25	537,25	c 52	699,25	c 79	861,25
c 13	211,25	c 26	543,25	c 53	705,25	c 80	867,25
J	217,25	c 27	549,25	c 54	711,25	c 81	873,25
K	223,25	c 28	555,25	c 55	717,25	c 82	879,25
L	229,25	c 29	561,25	c 56	723,25	c 83	885,25
M	235,25	c 30	567,25	c 57	729,25		
N	241,25	c 31	573,25	c 58	735,25		
O	247,25	c 32	579,25	c 59	741,25		

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